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Deliverable 6.3.1 – Improved resubmitted version.
STORM CLOUDS Business models and plan and networking activities for scalability and sustainability

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Executive Summary

The purpose of this deliverable is to draft exploitation plans for the exploitable foreground Intellectual Property (IP) of the STORM CLOUDS (SC) project. Exploitation plans elaboration process starts with working out business models for exploitable assets. The document follows the Description of Work (DoW) and the arrangements for Work Package (WP) 6 and Deliverable (D) 6.3. According to the plan the results of the workpackage are delivered in two expected deliverable releases: D6.3.1 and D6.3.2 due at the end of the SC project. Nevertheless, the purpose of the whole document is mainly to identify and evaluate the exploitable assets, present the methodology and process for devising the business models, present the elaborated business models, and determinate the exploitation plans structure and the action plan for their elaboration.

The structure of this document pretends to be the final structure of D.6.3.2. During the third period of the project’s lifetime we will be working on this document by filling it with content, particularly on the sections related to exploitation plans. Exploitation plans’ drafts and structures are reflected here, as well as the methodologies to be used for their elaboration. Final conclusions will be extracted at the end.

The main idea of creating the SC business models is to gain the SC concept scalability and sustainability. The STORM CLOUDS Platform (SCP) will be introduced into the market with the aim of dissemination and commercialization of the developed or verified service catalogues and other project foreground such as know-how, verified methods and practices. It is a part of a long-term vision of “Cities in Clouds”. The concept of commercialization relays on exploitation of open-source applications and other assets belonging to SC’s Partners.

Due to the nature of the project most of the outputs are released with an open-source license. But to make the results sustainable, there is a need to design a value stream that will bring back enough revenues to maintain, further develop and promote these results. Achieving the aim of generating revenues from freely available knowledge, resources and applications is a challenging activity. Therefore, the document will help the consortium’s partners to follow an established scheme of working out business model for the exploitable results of the SC project.

The document is organized in the following chapters:

- **Chapter 1: Introduction** - The introduction presents the background of the SC project and the document objectives. The section “Document objectives” includes: (i) a purpose of the document, (ii) a description of the audience and (iii) a brief note regarding the established methodology. The third section explains briefly how the consortium is going to achieve the final result, which is the entire exploitation plan for the SC Platform and assets at the partner level.

- **Chapter 2: SC exploitable assets** - The section presents the methodology of identifying and selecting the exploitable assets. Particular sections explain the difference between two exploitation levels: (i) the project level and (ii) the partner level. The “Assets’ table” presents all assets identified by partners. Afterwards the evaluation and selection of assets according to the established criteria takes place. This chapter presents two possible strategies for further application of an asset: dissemination or exploitation. The final version of “Exploitable assets matrix” presents only the assets worth exploitation together with the justification for their choice.

- **Chapter 3: The methodology of exploitation plan development** - The section presents the purpose of the established methodology and describes in detail its key elements: (i) the business model development workshop, with its objectives and methodological aspects, (ii) the schedule of workshops to be held during the project, (iii) procedures and activities for updating the business model, (iv) guidelines for establishing a feasible activity plan for bringing the business model into work (the exploitation plan), (v) activities planned for the elaboration of sustainability and exploitation plans (knowledge sharing and mentoring sessions). Furthermore, a set of tools is provided which will be used along the way to facilitate business model development, revision and feedback gathering in a remote collaboration setting.

- **Chapter 4: SC scalability and exploitation plan** – Scalability and exploitation plans are generated and presented at two levels: (i) the STORM CLOUDS Platform level and (ii) assets at the partner level. The starting point for generating scalability and exploitation plans is the elaboration of business models. The business models are created on the basis of the Lean Canvas constructed during the “Business model development” workshop. Lean Canvas are created for the platform as a whole and per each identified asset. Each element of the Lean Canvas is explained in detail together with justification. The second workshop called “Reporting on Lean Canvas” takes place. Exploitation and sustainability plans are fully constructed business plans based on previously created business models. Exploitation plans will be created during a series of mentoring meetings that will take place during the last project’s lifetime. The
exploitation and dissemination plan straddles/is composed of: (i) targeting, (ii) positioning, (iii) communication plans, (iv) risk and constraint analysis, (v) documentation and procedures, (vi) description of key performance indicators, (vii) elaboration of an activity plan for reaching KPIs and (viii) IPR management.

- **Chapter 5: Other exploitation opportunities** – presents individual exploitation plans for partners that are not exploitable asset owners.
- **Chapter 6: Summary and Conclusions** – Presents the findings of the deliverable and sets grounds for future work in this area.
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<th>Description</th>
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<tr>
<td>D</td>
<td>Deliverable</td>
</tr>
<tr>
<td>DoW</td>
<td>Description of Work</td>
</tr>
<tr>
<td>HP</td>
<td>Hewlett-Packard</td>
</tr>
<tr>
<td>IP</td>
<td>Intellectual Property</td>
</tr>
<tr>
<td>SC</td>
<td>STORM CLOUDS</td>
</tr>
<tr>
<td>SCP</td>
<td>STORM CLOUDS Platform</td>
</tr>
<tr>
<td>WP</td>
<td>Working Package</td>
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1 Introduction

1.1 Background
Project STORM CLOUDS aims at deeply changing the Cloud paradigm for Public Authorities. Even though Cloud Computing has been rising/developing over the last decade, the same cannot be claimed regarding Cloud Computing in Public Authorities. In fact several challenges must still be tackled before full adoption by these entities, factors such as: privacy, security, ethical issues as well as innovative and sustainable business models that will shape and promote Cloud Computing and / or its exploitable assets within the sector and industry. This latter challenge will be explored in depth throughout this document.

1.2 Document Target audience
This document is targeted mostly at the consortium partners. They are business partners and Pilot Cities. All of them are stakeholders of the project. Those private companies, municipalities and public institution are consolidated into one consortium and realize the common goal of taking advantage from the idea of “Cities in Clouds”.

The document is important for the audience as/since the project concerns both economic and strategic aspects of business and social activities of the partners. The document aim is to facilitate the elaboration between stakeholders now and in the further releases, present the business models and exploitation plans under which the SC project results will be exploited and sustained after the project completion. The audience is not only interested in material advantages, but also in the future results of the project. Partners desire/expect that the project helps to develop innovative society and realize the long-term vision of “Cities in Clouds”.

The document may also gain interest of other users while they decide to implement the solutions disseminated thanks to the SC project. The users could be inspired by business models presented in the document and they could try to adapt them for their own purposes. The other representative of the audience is European Commission. The document presents the STORM CLOUDS project development stage. European Commission may be interested in the document, because the SC project is partially funded by the European Commission within the 7th Framework Program.

1.3 Note on the methodology
The methodology of business model development and exploitation strategy consists of a few stages. Achieving the main result starts from identification, evaluation and selection of exploitable assets. The first goal has been reached with a self-evaluation “Exploitable asset questionnaire” filled-in by partners. The conclusions are made on the ground of gathered data. The level of the exploitation has been determined at that moment. Then an objective evaluation and selection of the assets has taken place with the use of earlier defined criteria. The aim of this stage was to select the exploitable assets that have enough exploitation potential and are well structured enough to provide a solid basis for a viable and sustainable business model. The selection of relevant exploitable assets was a starting point for defining the STORM CLOUDS business models.

It was decided to organize “Business model development” workshop, which involved application of the Lean Canvas’ model and workshop canvas development methodology and tools to provide relevant aid for brainstorming, discussing and refining the business models at the project level and at the partner level.

Finally, knowledge sharing and mentoring sessions will be organized for particular partners to prepare the fully constructed exploitation and dissemination plans for STORM CLOUDS Platform and exploitable assets on the basis of business models. This document presents the detailed structure for the exploitation plans. Full draft and conclusions will be delivered on D6.3.2. at the end of the project.

---

1 Detailed description in the paragraph 3.3.1.
2 STORM CLOUDS exploitable assets

2.1 Levels of exploitation
Every asset developed and cloudified during the SC project could be exploited or disseminated. The basic difference between exploitation and dissemination is that exploitable assets are assets that could be capitalized on and reused in other further initiatives. Dissemination means only the introduction of asset into the public sphere, promoting it and making it freely available to other users without expecting return. Partners are not only interested in generating business models for the STORM CLOUDS Platform, but also for exploitable asset at the individual partner level. Therefore, we consider SC exploitation at two levels: project level and partner level.

2.1.1 Project level
At the project level assets are exploited for a purpose of all partners together. They are one team and assets will bring the measurable effect for all of them. In the majority of cases the asset was worked out with a combined effort of all consortium’s members. Therefore, the result is also regarded as a common value and it is used at the project level. All members benefit from generated profit.

2.1.2 Partner level
At the partner level assets are exploited for a purpose of the individual partner. The ownership is clear and only that partner benefits from generated profit. The owner exploits the asset in any preferred way. The choice does not have to be agreed by the rest of the consortium’s partners.

2.2 Identification of assets
During the initial stage of the SC project Pilot Cities were obliged to prepare the list of available and prospective applications and then all partners of the consortium selected services to be activated in the cloud Platform and transferred to other cities. In the current section the aim is to define all the assets, which could be exploited by the consortium and/or by individual partner.

The process of selecting exploitable assets is complex. The difficulties could arise even in the first step, while the company has to decide which asset could be introduced on the market and generate satisfactory profit. Therefore, the methodology presents in the plain/simple way how to make the process of constructing business model much easier. The importance of the decision is crucial, so that the established methodology of constructing business model involves the commitment of all consortium’s partners. Partners’ analysis of exploitable assets is an obligatory element of forming the whole strategic plan of the SC project.

The first step to achieve the goal is brainstorming, which enables the participants to specify the characteristics of their assets and present them to the D6.3.1 coordinator. The communication is improved and standardized thanks to sharing with all partners “Exploitable asset questionnaire”, which is presented in Table 1. Partners fill in the document according to facts and dispel all doubts by consulting questionnaire’s author. If some issues are still unsolved, Pilot Cities or companies contact the deliverable coordinator individually or during regularly organised consortium’s audio conferences. The questions are answered per each asset, which could possibly be exploited during the project life cycle. The next step is the explanation of all the unclear answers with the partners at the intentionally organized audio conference.

<table>
<thead>
<tr>
<th>Exploitable assets questionnaire</th>
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<tbody>
<tr>
<td>What is the name of exploitable asset?</td>
<td>Partners name their assets.</td>
</tr>
<tr>
<td>Who is/are the owner/-s of exploitable asset?</td>
<td>The name of one of consortium’s partners.</td>
</tr>
<tr>
<td>What is the level of the exploitation?</td>
<td>Partners choose from: project level, partner level or both.</td>
</tr>
<tr>
<td>Who is/are the main user/-s of the exploitable asset?</td>
<td>Partners define the further potential users of the exploitable asset.</td>
</tr>
<tr>
<td>How do you describe the stage of the development of your exploitable asset?</td>
<td>Partners choose from: under development, early prototype, advanced prototype, complete prototype or commercialised version.</td>
</tr>
</tbody>
</table>
Could you characterize the type of innovation? Partners choose from: organisational processing innovation, product innovation, marketing innovation.

Is there a clear owner of the innovation or are there multiple owners? Partners choose from: clear ownership or joint ownership.

If you have chosen “joint ownership”, please explain more. Partners have to specify who shares with them the ownership.

If exploitation asset has joint ownership or exploitation partner, which is your position? Partners choose from different levels of exploitation entity - from lead exploitation entity to none interest in exploitation.

Will the product be introduced to the market or deployed within a partner? Partners choose from: commercial or internal exploitation, already commercialized or no exploitation planned.

If “no exploitation planned”, please explain why not? Partners answer the question in detail.

When do you plan to commercialize your product (material good or service)? Partners have to state precisely, e.g. “Within X (number) months after the project completion.”

If commercialisation has been started, what have been done? Partners answer the question in detail.

What is your current vision for the commercialisation of the asset? Partners answer the question in detail.

Table 1 presents the STORM CLOUDS’ asset table before the selections. Those are the assets identified by partners during filling-in “Exploitable assets questionnaire”. The data is gathered together in a cross-sectional way, regarding only the most important information.

Table 2: STORM CLOUDS’ assets table (status July 2015)

<table>
<thead>
<tr>
<th>Asset</th>
<th>Rapporteur</th>
<th>Expected Date of Commercialization</th>
<th>Exploitation Level</th>
<th>Development Stage</th>
<th>Innovation Type</th>
<th>Owner-ship</th>
<th>Exploitation Partner</th>
<th>Exploitation Type</th>
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<tr>
<td>Virtual City Mall</td>
<td>Aristotle University of</td>
<td>A few months</td>
<td>Partner level</td>
<td>Advanced Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
</tr>
<tr>
<td>application</td>
<td>Thessaloniki</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloudfunding application</td>
<td>Aristotle University of</td>
<td>A few months</td>
<td>Partner level</td>
<td>Early Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
</tr>
<tr>
<td></td>
<td>Thessaloniki</td>
<td>after its launch in Thessaloniki</td>
<td></td>
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<tr>
<td>Virtual City Tour</td>
<td>Aristotle University of</td>
<td>A few months</td>
<td>Partner level</td>
<td>Under development</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
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<tr>
<td>application</td>
<td>Thessaloniki</td>
<td>after its development and launch</td>
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<td></td>
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<td>in Thessaloniki</td>
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<tr>
<td>EU Participio application</td>
<td>Câmara Municipal de Águeda,</td>
<td>After its launch in Águeda</td>
<td>Project level</td>
<td>Complete prototype</td>
<td>Organizational processing innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
</tr>
<tr>
<td></td>
<td>Portugal</td>
<td></td>
<td></td>
<td>or commercialized version</td>
<td></td>
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</table>

2 Commercial exploitation means introducing of generated products to the market. Internal exploitation means deploying within a partner.
### Evaluation and selection of exploitable assets

When the answers are summarized and analysed, all partners are obliged to make an objective evaluation and selection of exploitable assets which all the participants should focus on, during the “Business model development” workshop. The final decision was made by two partners responsible for supervision of business model creation and the delivery of D6.3.1. Those are the companies RTDI and Alfamicro.

The evaluation methodology and selection of the exploitable assets, for which there are developed fully constructed business models, is based on specific criteria, which are:

- strong elements in the project;
- level of commitment of relevant partners to exploit the asset;
- level of the advancement in works (development stage);
- assessment of technological excellence of the asset;
- real chances for a market success;
- competition in the industry;
- probability of the total failure of the exploitation;
- the importance of its impact on society (local, national, global).

The criteria have to be diversified, because the consortium is not in the possession of data, which enables to precisely state, if that exploitable asset will bring the biggest success and the highest benefits to the STORM CLOUDS project. The results of the evaluation are presented in Table 3 where a simplified matrix of evaluation is provided. The Some particular w terms need explanation: **commercial exploitation** - possibility of commercial exploitation, **maturity** - close date of predicted commercialization, **accessibility** - advanced development stage, **adaptability** - easy adaptation for other users (it is a mandatory factor). Evaluation factors were formulated on the basis of qualitative characteristics described above in the same paragraph 2.3.
Table 3: STORM CLOUDS' internal evaluation matrix

<table>
<thead>
<tr>
<th>Name of asset</th>
<th>Commercial exploitation</th>
<th>Maturity</th>
<th>Accessibility</th>
<th>Adaptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual City Mall application</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Cloudfunding application</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Virtual City Tour application</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU Participio application</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Internal know-how of migration to cloud</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Cloud Consulting (know-how of all partners)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Internal know-how of HP for implementing cloud platforms and helping migrations to cloud</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>The SC Platform architecture (documents and ideas)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>SCP@HP STORM CLOUDS Platform</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

According to the methodology, the evaluators have to choose five assets with the best grades. The “adaptation” factor is the mandatory one for further exploitation. The chosen assets are: Virtual City Mall application, Cloudfunding application, EU Participio application, the SC Platform architecture, and SCP@HP STORM CLOUDS Platform. Three of the specified assets were the unquestioned leaders only with the positive grades. As the SCP@HP SC Platform is an obligatory asset for business model development, there were doubts only with one asset: the dilemma between Cloudfunding application and Hewlett-Packard’s (HP) internal know-how. Two factors decided that the consultants have chosen Cloudfunding application. First of all, the application is a tangible asset. Secondly, there is a need to equitably select an asset. Therefore, it will be unfair if the consortium will generate business models for three HP’s assets.

2.4 Exploitable assets

The consortium has identified a number of assets used by the STORM CLOUDS partners but there are no realistic circumstances which allow to generate business models for all of specified assets, whereas only a few of them were selected to be cloudified in earlier stages of the SC project life cycle. During the exploitable assets identification process, we have recognized nine assets. According to established methodology only five of them could be chosen as exploitable assets for which consortium partners prepare business models. The consortium partners have decided that business model will be generated only for those assets, which characteristics correspond with requirements specified in the methodology (i.e. in previous paragraph “Evaluation and selection of exploitable assets”). Consortium’s partners made the decision during cyclical audio conference.

The assets after evaluation and selection are presented in the Table 4. There are only those exploitable assets for which partners are going to prepare the business model. They could be exploited at different levels: project level, partner level or both of them. The data is gathered together in a cross-sectional way, regarding only the most important information.

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3 Those assets are applications of Pilot Cities described in D1.2.
Table 4: STORM CLOUDS selected exploitable assets

<table>
<thead>
<tr>
<th>Asset</th>
<th>Rapporteur</th>
<th>Expected Date of Commercialization</th>
<th>Exploitation Level</th>
<th>Development Stage</th>
<th>Innovation Type</th>
<th>Ownership</th>
<th>Exploitation Partner</th>
<th>Exploitation Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual City Mall application</td>
<td>Aristotle University of Thessaloniki</td>
<td>A few months</td>
<td>Partner level</td>
<td>Advanced Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>URENIO - research institution</td>
<td>Commercial</td>
</tr>
<tr>
<td>Cloudfunding application</td>
<td>Aristotle University of Thessaloniki</td>
<td>A few months after its launch in Thessaloniki Municipality</td>
<td>Partner level</td>
<td>Early Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>URENIO - research institution</td>
<td>Commercial</td>
</tr>
<tr>
<td>EU Participio (application)</td>
<td>Câmara Municipal de Águeda, Portugal</td>
<td>After its launch in Águeda</td>
<td>Project level</td>
<td>Complete prototype or commercialized version</td>
<td>Organizational processing innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
</tr>
<tr>
<td>The SC Platform architecture (documents and ideas)</td>
<td>Hewlett-Packard</td>
<td>Already during the project life cycle</td>
<td>Project level and Partner level for further projects</td>
<td>Advanced Prototype</td>
<td>Product (Service) Innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
</tr>
<tr>
<td>SCP@HP STORM CLOUDS Platform</td>
<td>Hewlett-Packard</td>
<td>A few months after the end of SC Project</td>
<td>Project level</td>
<td>Advanced Prototype</td>
<td>Product (Service) Innovation</td>
<td>Clear</td>
<td>-</td>
<td>Commercial</td>
</tr>
</tbody>
</table>

Partners have decided that there is a need to construct full business model for exploitable assets such as: SCP@HP STORM CLOUDS Platform, SC Platform architecture, Virtual City Mall application, Cloudfunding application and EU Participio application. All applications are described in detail in corresponding STORM CLOUDS deliverables under WP1 and WP2.

Those are the assets chosen with use of the objective criteria and with the biggest perspectives for further exploitation. The exploitation is planned at project level, partner level or both levels simultaneously.

SCP@HP STORM CLOUDS Platform\(^4\) is an exploitable asset identified by partner HP. STORM CLOUDS Platform is the most important exploitable asset for the whole STORM CLOUDS project. The main users are municipalities, city districts and other legal entities migrating their services and activities to the cloud.

HP has implemented the platform in its labs and is going to reuse the solution for further commercial projects. The SC Platform is the cloud infrastructure that was designed to host the applications selected by the SC consortium for conducting the migration of digital services to a cloud-computing paradigm. The exploitable asset is described in detail in "Platform Architecture Design" (D2.2.1 of WP2).

SC Platform architecture\(^5\) is an exploitable asset identified by partner HP. HP has generated numerous assets (e.g. architecture documents, procedures) and is going to reuse those assets to provide consulting services for other customers, which are cloudifying their business activities. Main users of exploitable asset are other cities/city districts, municipalities, companies migrating to cloud. The exploitable asset is described in detail in "Platform Architecture Design" (D2.2.1 of WP2).

Virtual City Mall application\(^6\) is the exploitable asset identified by Aristotle University of Thessaloniki. The author of the application is URENIO - a research institution of the University.

\(^4\) Described in WP2 (D2.2.1).
\(^5\) Ibidem.
\(^6\) Described in WP1 (D1.2) as URENIO’s application “Virtual City Marketplace”.

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The application is a common platform, which presents all shops around the city. It enables local entrepreneurs to introduce their businesses on the market and promote local brands online. Various levels of products and offers presentation are available. The application enables to manage the shop online.

The rapporteur has identified cities and city districts, professional associations, chamber of commerce as main users. The current vision for commercialization projects exploitation activities such as: helping in implementation, customisation and training, hosting the application and offering it as a service (monthly/yearly fee for hosting, back up, support etc.).

**Cloudfunding application** is the exploitable asset identified by Aristotle University of Thessaloniki (Greece). The author of the application is URENIO - a research institution of the University.

The application supports Thessaloniki’s local communities to collect money for social and charitable purposes. The application could be easily adapted by other cities. The application supports three types of projects: those for the environmental improvement of the city (e.g. creation of parks and playgrounds, expansion of bike lines); those for social entrepreneurship (e.g. non-profit enterprises promoting objectives that improve the city life or strengthen its social capital); those for knowledge-intensive and technology based youth entrepreneurship.

The rapporteur has identified cities and city districts, organisations managing districts (e.g. university campus, residential areas) as main users. The current vision for commercialization projects exploitation activities such as: helping in implementation, customisation and training, hosting the application and offering it as a service.

**EU Participio application** is the exploitable asset identified by Municipality of Águeda (Portugal).

The rapporteur has identified citizens and local communities as main users.

The development of the asset was already supported by the Municipality of Águeda. The asset is free and open software. Therefore, there is no commercial exploitation based on license fees. The current vision for commercialization projects exploitation activities helping in implementation of the application. New customers may need help with deploying the asset, and the business model behind the commercial exploitation of this asset is based only on services provided to adapt, enhance and deploy the asset for new customers.

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7 Described in WP1 (D1.2) as URENIO’s application “Crowdtilt”.
8 Described in WP1 (D1.2) as Municipality of Águeda’s application “Lime Survey”.
3 The methodology of business model development

3.1 Purpose of the established methodology

Business models provide the foundation for achieving the final aim of Task 6.2, which is to come up with a viable business plan for exploitable foreground IP of the STORM CLOUDS project. Therefore, this chapter includes the description of the steps we have planned for to come up with business models for a purpose of the SC project.

This chapter serves as an internal guideline for consortium members to carry out multidimensional analysis of their exploitable assets. It explains how to create a valuable business model step by step and sets up the plan which puts the models into practice. Importantly an effective business model is a living entity that should be updated. The methodology proposed under this project can also be reused by Project partners for other purposes.

3.2 The methodology description

Under Storm Clouds we have decided to rely on the business model development methodology based on Lean Canvas model and a collaborative way of canvas development during a moderated workshop. The models are developed in a process composed of a few stages. After identification and selection of the exploitable assets, a business model development workshop takes place with participation of Partners involved in exploitation of the identified exploitable assets. During the workshop participants go through a couple iterative rounds of brainstorming and discussions to define all critical elements of the value proposition and flow behind the given exploitable asset.

Business Model Lean Canvas is a business modelling framework authored by Ash Maurya⁹ and is a variation of the classic Business Model Canvas designed by Alex Osterwalder¹⁰. We went for the lean variation of the framework for its simplicity and its relevance to our objectives. We plan for an introduction of novel technological and organisational concepts onto the market, so in this respect SC partners are similar to lean start-ups on their way to the market.

The collaborative canvas development workshop typically follows this pattern: (i) the methodology (the Lean Canvas template) is explained to the team members involved, (ii) workshop participants are split into teams if the group is going to work on more than one business model at a time, (iii) then the fields of the canvas are filled in and discussed in short brainstorming sprints. This is how the first versions of business models both at the project level and at the partner level were created in Storm Clouds. The process of business model generation does not stop there. In the next steps business models are reviewed and updated by their owners periodically, and in Storm Clouds this will happen still at least once during the project life cycle. The developed models need also be consulted internally and externally by all the Partners, to gain acceptance and take-up at the decision-making level of each organisation. The final version of business models will be presented in the final release of the deliverable D6.3.2.

3.3 Detailed presentation of the methodology

3.3.1 Business model development workshop

3.3.1.1 Objectives

The main aim of the business model development workshop was to propose, discuss and specify the strategy for the SC project results exploitation in a joined, collaborative effort of all the partners. The involvement of all the partners in the development of the business models was necessary to build the common understanding, consensus and commitment in setting the strategic directions for the exploitation of the key project results. On top of that the value of know-how spread over nine legal entities must have been mobilised to ensure good quality of final outputs.

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, and http://leanstack.com/lean-canvas/

The methodology enables Partners to take a look at their assets from different perspectives, which gives them the opportunity to discover new functions and benefits that the assets can provide, and thus suggest clues on how to exploit them in an innovative way. Therefore the main aim of the workshop was to figure out, which values are most important, how to introduce them on the market and exploit commercially or make economically sustainable otherwise by identifying an alternative, indirect source of revenue that will turn the model complete and economically sound in the long run.

The workshop has been organised to ensure that every consortium partner fully understands the methodology, that the common goals are properly defined and shared by all the stakeholders from within the consortium. The workshop was a critical milestone for creation of the business model and the starting point for defining the exploitation strategy for SC results.

The overall goal of the workshop was to come up with a business model for each exploitable asset, in particular for Storm Clouds Platform as well as selected Storm Clouds Services that presented enough value to provide a solid basis for a sustainable business model.

a. The workshop plan

As we have considered assets that could be exploited at the project level and the partner level separately the workshop had to provide space for development one complete business model for each pre-selected exploitable asset, therefore it had to be structured into the following sessions:

- Introductory session on the methodology (first morning session)
- Business model development session for the project level exploitable asset, namely the Storm Cloud platform (second morning session),
- Two afternoon sessions dedicated to assets meant to be exploited by partners individually, namely the Storm Cloud Services (this involved: five teams, each one working out a business model for one Service; during the first session participant brainstorm and prepare initial draft of the model and during the second one they present, discuss, adapt and finalise the model).

b. The workshop programme

Note: The initial workshop schedule proposed in the D6.3.1 had to be slightly modified due to the constraints related to partners travelling time and availability. This has not affected however the expected outcome of the workshop. Below we present the final version of the schedule.

<table>
<thead>
<tr>
<th>First Session</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9:00-9:30</strong></td>
</tr>
<tr>
<td>INTRODUCTION (30 minutes): Highlights of the Business model development workshop and explanation of the main aims of the meeting, theoretical presentation of Lean Canvas methodology (questions &amp; answers);</td>
</tr>
<tr>
<td><strong>9:30-10:50</strong></td>
</tr>
<tr>
<td>PRESENTATION (80 minutes): exploitable assets at a project level; each field of Lean Canvas explained in 5 minutes by workshop coordinator, then 5 minutes of individual work followed by group discussion aimed at filling-in the given field (10 minutes); in the first session 4 out of 9 fields will be covered;</td>
</tr>
<tr>
<td><strong>10:50-11:00</strong></td>
</tr>
<tr>
<td>Coffee break;</td>
</tr>
<tr>
<td><strong>11:00-12:40</strong></td>
</tr>
<tr>
<td>PRESENTATION (100 minutes): exploitable assets at a project level; each field of Lean Canvas explained in 5 minutes by workshop coordinator (a reminder), then 5 minutes of individual work followed by group discussion aimed at filling-in the given field (10 minutes); in the second session other 5 out of 9 fields will be covered;</td>
</tr>
<tr>
<td><strong>12:40-13:30</strong></td>
</tr>
<tr>
<td>Lunch (50 minutes);</td>
</tr>
</tbody>
</table>
Table 5: Workshop Second Session Schedule final version

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30-14:30</td>
<td>BRAIN WRITING (60 minutes): exploitable assets at a <strong>partner level</strong>; during this round each group generates business model for one exploitable asset (maximum 5 exploitable assets) and therefore all groups receive a plain Lean Canvas and post-it cards, then the participants have 50 minutes (~5 minutes per each field) to discuss their ideas and to write them down on Lean Canvas, giving a very brief explanation and justification regarding presented ideas and place their notes on the canvas;</td>
</tr>
<tr>
<td>14:30-14:40</td>
<td>Coffee break (10 minutes);</td>
</tr>
<tr>
<td>14:40-15:15</td>
<td><strong>Final PRESENTATION</strong> (50 minutes) during this round each group has time to present the results of their teamwork; there are 5 groups and each of them has 10 minutes to present their ideas with explanation; the discussion was moderated by the workshop coordinator.</td>
</tr>
<tr>
<td>15:15</td>
<td>Final Coffee break</td>
</tr>
</tbody>
</table>

c. **Updating the business model**

To facilitate remote collaboration on the business model development between the partners and potential stakeholders, we plan to use the online tool [canvanizer.com](http://canvanizer.com), which enables users to brainstorm, write down the results of discussion, structure concepts on ‘canvas’ and share the results with other team members. The tool proves to be practical while working with remote teams collaborating from different countries.

Moreover, the canvanizer.com may be also used as a communication tool with future users of SC results. The Pilot Cities and partner companies are going to offer services based on SC results, and the canvas can help them keep the focus and communicate effectively the key benefits of these services. Furthermore, since all applications created by the project are open-source, they can be reused by other municipalities or companies independently from SC partners. The business model canvas updated and shared via canvanizer.com can help also others to understand and spread further the information on the benefits of implementing the applications.

There is also an option of organising a workshop series with end-users conducted by the Consortium if there will be an interest in implementing solutions developed by STORM CLOUDS project. The workshop would be especially helpful for those entrepreneurs/organizations, who are sure to implement the product, but they do not know how to adjust the concept to their own business. The workshop gives them an opportunity to fully understand their capacity to adopt the product and realise strong and weak points of their value chains e.g. from a revenue perspective.

### 3.3.1.2 Lean Canvas tutorial

The workshop started with explanation of the Lean Canvas tool and the workshop plan. The Lean Canvas template is illustrated in the Figure 1. The numbers on each field specify the order of filling in the Lean Canvas. Each element of the Lean Canvas represents the key component of a complete business model. All the fields of the canvas, i.e. all basic elements of the business model that must have been explained in detail by the workshop moderator. During the explanation part there was room for questions and answers so that all participants understand the tool, the objectives and are well prepared for next steps.

When all doubts are cleared up the central part of the workshop starts, when participants start brainstorming on the elements of the business model to be filled in. Partners receive sticky notes and Lean Canvas templates to jot down their initial ideas on how to fill in all nine fields of the canvas. This is done field by field so that there are nine steps to go through and each of them participants brain write and then share and discuss within teams their ideas. In the course of these discussions initial business model descriptions take shape.
**Figure 1: The Lean Canvas pattern**

### a. Elements of the business model – 9 fields of the Lean Canvas

#### #1 Problem
The first step of preparing the analysis for business model is to find out an existing problem on the market or in the society. It is an important action, because the service provider cannot make a mistake of creating a misplaced offering. The demand for the product or solution is a vital factor. If the company does not want to waste its effort, money or time, it has to understand the circumstances occurring on the market: Is there any market niche that their assets could fill in? Are there any social or cultural trends that the assets can refer to? Do we know any testimonials from potential end-users that justify the need for what we want to provide?

#### #2 Customer Segments
The next step involves defining target customers groups, both direct users and potential beneficiaries or third partners that benefit. It is important to consider the canvas from the perspective of each defined target group. Linking identified needs to relevant target groups is the key phase of the business model generation process. Defining the relevant customers segments can be done by answering questions such as: Who are we creating value for? Who are our key customers? Who are we creating value for? In identifying and distinguishing relevant target groups thinking of how do we get new customers helps as customer access channels facilitate right segmentation.

#### #3 Unique Value Proposition
UVP is about what we provide better than anyone else. What's made our offering unique? Why future customers would reach out to our solution instead of to anything else available on market. What is the most important value that we deliver to the customer? How well this satisfies the identified needs?

#### #4 Solution
This covers the detail description of the solution provided by the business owner. It is good to focus on no more than three features of fundamental importance. This will help define the so-called MVP (Minimum Viable product), which is in particular important for a starting business. The emphasis should be placed in particular on: How do we resolve the existing problem? What technologies we need to apply? How much innovation is critical to us? What is the life expectancy of our solution and underlying technologies?

#### #5 Channels
Channels are the ways of getting access to the client. They may vary and the biggest challenge is to find the most efficient path. The business owner has to find an effective communication channel and form a comprehensible message for potential clients. While considering this field of the Canvas the following questions must be answered: What are key channels (reaching customers and contacts, logistics, communication)? What are key activities (e.g. Marketing and sales, service)? What are key resources (people, know-how, infrastructure, capital)? Who are our key partners? Why are they important? What are the associated risks? How will we build and sustain the long-lasting relationship with our target customer group?

#### #6 Revenue Streams
A very important aspect of the business process modelling is to identify the sources of revenues. In order to find out and evaluate the streams of the revenue one can consider: What/how much the customers are prepared to pay? What your customers are used to pay for? How much are they paying currently? What kinds of budgets are available? Which strategic partner is willing to pay? (If indirect revenue
streams are available). It is important to estimate when first revenues can come and when the break-even point is expected. The business is in a better position if it has other resources of revenue that can cover up for the initial investment and these or other sources of initial capital (equity, loan, etc.) must be identified.

**#7 Cost Structure.** The field “Cost Structure” has a big importance as it is connected with every field of Lean Canvas. The main cost positions are gathered and divided into fixed and variable costs. That element of analysis refers to all sorts of costs that the business may generate, including but not limited to the distribution, hosting, service, people and overhead costs. It is very important to think over and decide, which costs are absolutely necessary in the first days of the project life cycle and which have a lower relevance. The entrepreneur has to estimate how much money the venture needs from the first days until it generates its first income.

**#8 Key Metrics.** There is always a need to evaluate the progress of the project. Therefore, every business model based on Lean Canvas requires key metrics, which are indicators of the performance effectiveness or the risk of failure. ‘Key Metrics’ give the opportunity to examine, which decisions were correct and when the entrepreneur/partner should be certain that his performance was successful. “Key Metrics” enable to notice the need of changes in the company.

**#9 Unfair Advantage.** This is the last element of the Lean Canvas relevant in particular for start-ups as it relates to our competitive advantage at the starting point and entry barriers for clones. Unfair advantage can be an asset critical for the market success of the proposed solution but is hard to get for the competitors. It can be a patent, exclusivity agreements with a key partner or access to rare resources.

3.3.1.3 **Workshop organization**

**a. Workshop celebration**

The workshop took place during the second day of Agueda General Meeting on 3rd of December 2015. Jan Kaczmarek from RTDI acted as the meeting moderator and the person introducing participants to the Lean Canvas as well as the overall methodology of SC business model development, including the workshop objectives and plan. The event went on schedule and was supported by pre-prepared narration and explanation slides.

The following people participated in the workshop: Agustín González-Quel (Ariadna); Marco Consonni, Claudio Caim (Hewlett-Packard); Alkiviadis Giannakoulis (European Dynamics); Jan Kaczmarek, Weronika Wietrzynska (RDTI); Panagiotis Tsarchopoulos (Aristotle University of Thessaloniki); Maria Martins (Alfamicro); Julián Arroyo (Valladolid); Dimitris Simitopoulos (Dimos Thessaloniki); Miguel Tavares, Jorge Rocha, Marlene Marqués (Cámara de Águeda).

![Figure 2: Partners during the business model development workshop in Agueda.](image)

**b. Updating the list of exploitable assets**
Before the proper part of the workshop took place the Partners once again have discussed the list of exploitable assets. Because after releasing D6.3.1 there were some updates in the project key outputs, including the advanced maturity of the city services as well as the SC framework it was decided that a minor update of the list of exploitable assets is necessary. The list was revisited, new items added, status updated and the assets re-evaluated.

The changes mainly concerned the service portfolio and the assessment of the development maturity of the exploitable assets. Eventually 6 candidates where selected as exploitable assets that merit development of a full business model and exploitation strategy.

### Table 6: The updated STORM CLOUDS exploitable asset inventory

<table>
<thead>
<tr>
<th>Asset</th>
<th>Exploitation Level</th>
<th>Development Stage</th>
<th>Innovation Type</th>
<th>Ownership</th>
<th>Exploitation Entity</th>
<th>Exploitation Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORM Clouds Smart City Platform</td>
<td>Project level</td>
<td>Advanced Prototype</td>
<td>Product and organizational innovation</td>
<td>Joint – all Partners</td>
<td>European Dynamics</td>
<td>Commercial</td>
</tr>
<tr>
<td>Virtual City Market application</td>
<td>Partner level</td>
<td>Advanced Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>Aristotle University of Thessaloniki, Greece</td>
<td>Public use with indirect income</td>
</tr>
<tr>
<td>Cloud Funding application</td>
<td>Partner level</td>
<td>Early Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>Aristotle University of Thessaloniki, Greece</td>
<td>Public use with indirect income</td>
</tr>
<tr>
<td>Live the City application</td>
<td>Partner level</td>
<td>Advanced Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>Municipality of Valladolid, Spain</td>
<td>Public use with indirect income</td>
</tr>
<tr>
<td>Have Your Say application</td>
<td>Project level</td>
<td>Complete prototype or commercialized version</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>Câmara Municipal de Águeda, Portugal</td>
<td>Public use with indirect income</td>
</tr>
<tr>
<td>City Branding application</td>
<td>Partner level</td>
<td>Advanced Prototype</td>
<td>Product Innovation</td>
<td>Clear</td>
<td>Aristotle University of Thessaloniki, Greece</td>
<td>Public use with indirect income</td>
</tr>
</tbody>
</table>

All exploitable assets, included in the above Table 9, are described in detail in a document D3.3 “Cloud-based public services portfolio”. Some of them are called differently than deliverables of the WP1 / WP2 or the “Exploitable asset questionnaire”, but they are the same assets at the further development stage.

STORM Clouds Smart City Platform is the same asset as SCP@HP STORM CLOUDS Platform, described in 2.4 paragraph. It is an exploitable asset on the project level.

Other assets are services exploited on the partner level.

The Virtual City Market application is referred to in following passages as Virtual Market application (for shortness).

The Live the City and Have Your Say applications are the new assets that were added in the current update of the exploitable asset inventory.

### c. Workshop conclusions
The main aim of the workshop was to find the most efficient way to commercialise the identified exploitable assets. Business models have to provide for the interest of each Consortium’s Partner and give the positive impact on achieving the expected Project’s results.

Partners agreed on generating business models for six exploitable assets. The chosen assets were i.e. STORM Clouds Smart City Platform and the catalogue of services, which consists of Virtual City Market, Cloud Funding, Live the City, Have Your Say and City Branding applications.

The main business model for Storm Clouds Smart City Platform was profoundly discussed and settled during the workshop. Partners presented and discussed different ideas and options for joint exploitation approach, but eventually a consensus was reached and one option prevailed and was described in detail.

All the remaining templates filled in for the selected city applications (Virtual City Market, Cloud Funding, Live the City, Have Your Say, City Branding) were drafted to maintain the most relevant elements of the structure and were supplied with the core content during the workshop. The business models were finalized and approved via e-mail after the meeting.

In order to satisfy the requirement set in the DoW (T6.2) on the assessment and validation of the business models with relevant stakeholders, the partners took a commitment to gather feedback on the proposed business model internally within their organizations (including key sponsors, key beneficiaries or end-users).

The results of the conducted “Business model development” workshop are presented in Chapter 4. The chapter wraps-up the output of the collaborative effort undertaken by all the Partners to define business models for the Storm Clouds Platform and the city services.

3.3.2 Exploitation and sustainability plans development

Following the creation of business models, exploitation and sustainability plans will be developed. The aim of these plans is to delineate a common strategy towards the exploitation of Storm Clouds tangible and intangible results. Exploitation and sustainability plans have been drafted for six exploitable assets: Storm Clouds Smart City Platform and the catalogue of services, Virtual City Market, Cloud Funding, Live the City, Have Your Say and City Branding applications.

In accordance with what was established in DoW, in this deliverable there will be presented the drafted and pre-agreed exploitation and sustainability plans that will be implemented during the rest of the project’s lifetime and beyond. The following activities will be undertaken in order to help partners create their exploitation and sustainability plans.

3.3.2.1 Market research

Exhaustive market research will be performed in order to understand target market segments, study current competitors and determine the position of each service provider on the market.

3.3.2.2 Knowledge sharing activities

Knowledge sharing activities have the objective of improving partner’s knowledge on exploitation and sustainability plans. Excluding Storm Clouds Smart City Platform, that is owned by all project partners and commercially exploited by European Dynamics, all of the exploitable assets are of public use. Ownership of those assets is held by public institutions, such as universities and municipalities that are not experienced in business exploitation activities and may have for this reason difficulties in designed a reliable and sustainable exploitation plan. For this reason, several activities will be undertaken in order to raise their knowledge on the subject. Education activities will include:

- Webinar on business exploitation plans
- Elaboration of guidelines and instructions to be shared with the partners. These will include, but not be limited to, the materials explained during the webinar (audio files, slides, minutes, etc.)
- Elaboration and sharing of a catalogue of exploitation plan examples to be used for inspirational purposes.

3.3.2.3 Mentoring meetings

For planning and kicking-off individual exploitation plans, series of mentoring meetings will be celebrated. Meetings will be celebrated with the help of online meeting tools. At least one joint (mentor and exploitation partners) introductory mentoring meeting and two series of individual (mentor to partner) mentoring meetings will be celebrated. Preliminary objectives of these meetings are the following:

- Deep analysis and description of distribution channels
- Elaboration of a list of activities to be undertaken for optimal use of distribution channels
- Elaboration of a communication plan
- Risk analysis
- Key performance indicators definition
- IPR issues solving

3.3.2.4 Conclusions on Exploitation plan development
4 STORM CLOUDS scalability and exploitation plan

4.1 Scalability and exploitation plan for Storm Clouds Smart City Platform

4.1.1 Storm Clouds Smart City Platform business model

4.1.1.1 Overall approach and identification of constraints

The main problem with generating business models for STORM CLOUDS Project is the fact that exploitable assets owners are both private companies and public institutions like cities and municipalities. The European law does not allow public institutions to gain direct income from services offered as a public good. From the perspective of municipalities, some of the exploitable assets of the SC Project are public goods. Cloudified services are the outcome of the engagement of Pilot Cities and they are targeted at the municipalities. Those Pilot Cities are owners of the applications and as they are public entities what they own is a public good and cannot in principle be commercialised. Nevertheless, due to the technical work provided by the industrial and academic partners the services have gained added value. The services were cloudified and universalised so that they could be reused in other interested cities, in particular those chosen under the Call4Cities. The main result of the SC Project: the SC Platform with a catalogue of cloudified applications (the Catalogue) accompanied with a reusable set of practices and know-how gained on the way can be successfully exploited by technology partners that stand behind the development of the framework and pilot deployment of the services.

The key outcome of the project is a cloud-based platform and the catalogue of re-useable city services. This output must be exploited jointly by the technology partners contributing to its development in particular HP and European Dynamics as well as Ureno and Ariadna. The services deployed in pilot cities constitute independent exploitable assets that can be further maintained and offered to the citizens beyond the project lifetime, for which a business model at the partner level needs to be also defined. Meanwhile there are no formal constraints on the exploitation of the Platform as a whole, because all the source code of the platform and the services in the catalogue are released under an open source licence, the commercial exploitation of the services that are already deployed in the cities is not possible. Due to the legal constraints described above, the municipalities cannot charge citizens and generate other revenues but taxes and legally enforced fees. Therefore the assets owned by the municipalities can only be exploited under a model that involves generating value that pays back indirectly in the form of increased revenues from tax collection (VAT, city tax, income tax or corporate tax). Moreover, particular focus was placed on other than monetary intangible benefits including: quality of life, investment attractiveness of the city, citizen and visitor satisfaction that indirectly increase domestic product, employment and taxable incomes.

Taking into account all the legal aspects described above, a discussion was raised regarding the final version of the business model on the project level. The business models on individual partner level, despite insufficient financial impact on the partners, will result in growth of the revenue source on the platform level.

4.1.1.2 The SC Platform business model

During the workshop different options for the ultimate SC Platform exploitation approach and business model where discussed. The full report on the discussions held falls beyond the scope of this deliverable so let us straight away present the model which came out as the final consensus of all the participants.

The key assumptions and conclusions agreed upon during the workshop:

1. European Dynamics (ED) acts as the key exploitation partner responsible for the platform maintenance and offering after the project completion.
2. HP as technology contributor will make an agreement with European Dynamics on a fair revenue share whenever the restricted background or foreground IP of HP must be involved at any state of the exploitation.
3. ED will provide the commercial package including the Storm Cloud Platform, the catalogue of services and the necessary documentation such as manuals and instruction materials on how to make use of the Platform.
4. ED will maintain the Platform and the Catalogue and will prepare and present a commercial offer to its target users: the Brokers, i.e. software companies or other kind of multipliers (e.g. consultants) that want to contract cloud-based city service deployment directly with municipalities worldwide.

5. The Brokers earn money by offering municipalities (B2G market) the cloudification services or deployment of new services from the catalogue of services utilising framework resources provided and constantly updated by ED.

6. Brokers can update and create new services and add them to the Catalogue maintained by the ED. ED certifies the services and controls the quality of applications placed in the Catalogue. Under this model the Catalogue works like an app marketplace under the quality supervision and control of ED.

7. In return the Brokers host deployed services at ED. ED hosts the Storm Clouds platform deployments in cooperation with selected IaaS providers and becomes a value-added reseller of their cloud infrastructures offering it to Brokers with the SC Platform package. The reseller margin pays the maintenance cost and further investments in the SC Platform development.

8. First Brokers are SC Partners taking the role of integrators, namely URENIO and Ariadna. As project partners they have a privileged position in offering their services to municipalities in Europe and beyond due to the experience gained during the project and the reference use case portfolio built under the project. However, ED will offer the SC Platform as well as the Catalogue to all B2G software providers and consultants and will make effort to promote the platform and the marketplace as widely as possible trying reach out to Brokers that will maintain the entire Storm Clouds Ecosystem.

9. The way how the deployment is paid by the municipalities is up to the Brokers and their sales and contracting models and negotiation approaches. It is foreseen that each Broker can have its own strategies for pricing and maintaining the deployed services. This does not affect the sustainability of the Platform and the Catalogue as revenues are guaranteed under the IaaS value-added reselling model of ED.

10. All code is available under an open source licence and the toolkits provided by ED are freely available so that

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**Figure 3: Diagram illustrating the STORM Clouds Smart City Platform business model**
### a. STORM Clouds Smart City Platform Lean Canvas

During the workshop the full Lean Canvas was defined for the Storm Clouds Smart City Platform asset, which includes SCP Platform together with the Catalogue of services, as presented in the previous section.

![Figure 4: Lean Canvas for STORM Clouds Smart City Platform](image)

### b. Problem addressed by SC Smart City platform

STORM Clouds Smart City Platform is an IT solution, which addresses the problem of lack of high-tech and innovative IT solutions in municipalities. The main obstacles are high costs of IT departments, difficult implementation of novelties in public institutions, lack of “cloudification” standards for public sector, vendor lock-in strategies exercised by IT providers. The citizens expect implementation of innovative solutions as an indicator of continuous municipality development and increasing the efficiency of public services.

Innovative cities also face the problem of space deficiency, both real and virtual. They do not manage to maintain their own physical servers in a city hall and there is no virtual space to host all applications needed by the citizens.

### c. Customer segments

The STORM Clouds Smart City Platform and the catalogue of the services/applications is a solution targeted primarily at the Brokers who act as the end providers and consultants for the municipalities. Municipalities due to lack of relevant technical know-how and capacities in house will typically rely on external providers/consultants (the Brokers) for customising and deploying the applications. Due to the Platform these customisations and deployments can be done cheaper and in shorter time.

### d. Solution

The solution is composed of: the Platform code (package), the catalogue of ready to deploy services, tools and manuals targeted at the Brokers, incl. deployment scripts, and easy integration with IaaS offered by commercial cloud providers or compatible private clouds of the municipalities.

### e. Unique value proposition

The unique value proposition of the solution sits on: the know-how on “cloudification” of public services, openstack set of tools customised to the needs and requirements of cloudifying applications in municipalities, other unique
deployment tools developed under the project, the catalogue of proven applications that can serve as a set of reference success stories, easy migration from pre-production to production environment, free up to date toolkit.

f. Channels
The channels of dissemination will depend on the target user group. The Brokers will be accessed via events and conferences, PR and publicity activities focused on professional press, developers fora and outbound marketing campaigns. We also assume direct communication campaigns targeted at IT heads of municipalities and eAdministration and public procurement officers and specialists to raise awareness about the Platform and the benefits it can bring to public administration at local and central level. It must be noted again that municipalities with enough know-how in house can freely access and reuse SC source codes and toolkits and exploit them on their own. Public procurement officers can be inspired and direct the public procurement process in a way that would facilitate reuse of SC results with mutual benefits to both the cities and the providers.

g. Revenue streams
The revenue stream comes mainly form the commission on the IaaS resold by European Dynamics as well as the certification fees charged to the Brokers who want to add their services to the platform and thus promote their services within the community. The revenues will cover the maintenance and operational expenses, incl. maintenance, updates, quality control, support.

h. Cost structure
Main costs are associated with platform certification, customization and updating.

i. Unfair advantage
Our unfair advantage consist in being the first on this niche B2G market, the experience gained along the project, and the ability to demonstrate a set of success stories (deployments in pilot cities).

4.1.2 Storm Clouds Smart City Platform exploitation plan draft

4.1.2.1 Targeting

a. Target group
Detailed description, including timing and geographical coverage

b. Quantification and qualification of target groups

4.1.2.2 Positioning

a. Main competitors

b. Comparison of competitive solutions or approaches

c. Unique value proposition

4.1.2.3 Communication plans

a. Description of the communication channels and tools

b. Communication activities plan
Steps to be taken to use the available channels, reach the potential users and get feedback

4.1.2.4 Constraints and risks

4.1.2.5 Documentation and procedures
Catalogue of documents needed to deliver the service: preparatory instructions, agreements, manuals, etc. This should include all the documentation clients will need to really use the service
4.1.2.6  Key performance indicators (KPIs)

4.1.2.7  Actions to be taken to achieve KPIs

4.1.2.8  IPR management
4.2  Scalability and exploitation plans for exploitable city services

4.2.1  Towards the final version of Business models for the city services

Services deployed by the STORM Clouds project in the municipalities, either involved in the project as partners or third parties under the call for cities, are self-contained, valuable assets that could be commercially exploited with high potential for market success and widespread uptake. However due to the constraints discussed by in the previous sections the municipalities (i.e. the owners of the assets in question) cannot sell them directly to the end users. However if we consider an increase in tax revenues as indirect income that can result from the operation of the service then a complete and viable business model can be defined for each public service. The services help the local communities and authorities to support their local economy, social policies and foster the wellbeing of the citizens. What is more, the services piloted within STORM Clouds project address community issues that commercial offering might not be able to solve. Strengthening local community, connecting and engaging with citizens bring value other than monetary benefits that local authorities and citizens appreciate.

Five (5) city applications divided into three categories has been identified as exploitable assets and considered in the business model generation workshop: (i) city governance (Have Your Say), (ii) innovation economy (Virtual City Market, Cloud Funding, City Branding) and (iii) quality of life (Live the City). All of them are applications cloudified, update or developed by Storm Clouds and are currently deployed in partner cities.

All services are described in detail in the deliverable D3.3 “Cloud-based public services portfolio”, so we will not repeat this information here.

In the following sections we will present the business models defined during the Agueda meeting and in the follow offline work within the consortium. Following the elaboration of business models exploitation and sustainability plans will be elaborated. Drafted plans and their structures will be presented in the following sections.
4.2.2 Scalability and exploitation plan for Virtual City Market application

4.2.2.1 Virtual City Market business model

a. The Virtual City Market lean canvas

b. Problem addressed by Virtual City Market

Virtual City Market is an application, which addresses the problem of the online unavailability of the local, regional shops. The main barriers are too high cost of transition into e-commerce business etc., an insufficient promotion of small local shops and lack of one single point of contact between citizens/tourists and shops.

c. Solution

The aim of the service is to give local entrepreneurs the possibility to create their online shops using the Virtual City Market application without the need to invest in e-commerce. The solution offers visibility of shops to visitors online as well as facilitates physical access by helping visitors to locate the shop on the map and navigate them via the mobile map application (e.g. Google Maps). Because the database of shops has been built in the cooperation of the local chamber of commerce the catalogue of shops is as complete as it can be which is of value to city visitors.

d. Customer segments

The application is primarily targeted at the following customer segments: tourists, local citizens and local companies.

e. Unique value proposition

The unique value proposition of the service is online access to the majority of shops situated in the city from one virtual marketplace for the clients/visitors. As for the local business the possibility to quickly and cost effectively mark their online presence, become visible to the wider group of the visitors and open an online shop or website at a minimal cost.

f. Channels

The main channels to access the tourists and local shop goers will be local tourist agency and stickers/posters placed in the shops. As for the shop owners they can effectively be approached via a chamber of commerce, targeted outbound marketing campaigns and word-of-mouth communication.

g. Revenue streams

The money necessary to deploy and maintain the service is provided from the municipality budget, and this investment should be returned in the increased revenue from taxes. The impact of the service should result in additional income from Personal Income Tax (PIT) (against increased revenues of business owners acting as sole
traders and their employees), Corporate Income Tax (CIT) (corporate tax paid by the incorporated business establishment benefiting from the service), Value Added Tax (VAT) (form the increased turnover of goods and services paid by tourists and local citizens) and other taxes like city tax (increased number of tourists coming to the city due to better service). Additional revenues from taxes can enable to cover essential maintenance cost of the application as well as encourage investment in further development of the services or even in new services.

h. Cost structure
Main costs are derived from application deployment and costs derived from platform maintenance and updating

i. Unfair advantage
Principal competitors will be applications that add value in order to improve the quality of life of local communities

4.2.2.2 Virtual City Market application exploitation plan draft

4.2.2.2.1 Targeting

a. Target group
Detailed description, including timing and geographical coverage

b. Quantification and qualification of target groups

4.2.2.2.2 Positioning

a. Main competitors

b. Comparison of competitive solutions or approaches

c. Unique value proposition

4.2.2.2.3 Communication plans

a. Description of the communication channels and tools

b. Communication activities plan
Plan the steps to be taken to use the available channels, reach the potential users and get feedback

4.2.2.2.4 Constraints and risks

4.2.2.2.5 Documentation and procedures
Catalogue of documents needed to deliver the service: preparatory instructions, agreements, manuals, etc. This should include all the documentation clients will need to really use the service

4.2.2.2.6 Key performance indicators (KPIs)

4.2.2.2.7 Actions to be taken to achieve KPIs

4.2.2.2.8 IPR management
4.2.3 Scalability and exploitation plan for the Cloud Funding application

4.2.3.1 Cloud Funding application business model

a. Cloud Funding application lean canvas

![Lean Canvas for Cloud Funding application](image)

b. Problem addressed by Cloud Funding application

Cloud Funding is an application, which addresses the problem of underfunding of important social and community project from municipal budgets. It helps to overcome the difficulties and barriers in fund raising for citizen-driven, grass-root initiatives that has not been addressed so far by local authorities.

c. Solution

Cloud Funding provides a professional fundraising tool for city activists and a communication platform allowing them to attract attention to and build critical mass of support for city-related causes and projects. The application enables end-users (citizens, activists, NGOs, etc.) to raise money and support for specific projects under a typical crowd-funding model. The causes can vary from encouraging local entrepreneurship, or promoting innovative technologies to improvement of the local environment or infrastructure, or even organising cultural events and fests.

d. Customer segments

The application is primarily targeted at local citizens, local social activists and city life animators, but also local businesses active in the city social sphere (e.g. club owners, private art galleries) and other local entities (e.g. NGOs), which would like to raise funds for their social initiatives targeted at local communities.

e. Unique value proposition

The unique value proposition of the service lies in that it offers purpose-specific, socially-oriented fund-raising and communication platform free of charge (no commission) and with good visibility to local authorities, institutions and citizens.

f. Channels

The service will benefit from the wide range of communication channels that the municipality typically uses while contacting the citizens (websites, correspondence, leaflets, posters in the city halls, etc.) and the network of local
institutions responsible for culture, arts, education, tourism and entertainment (culture centres, libraries, sport centres, parks, schools, points of interest). The municipalities can also leverage local social media channels (official fanpages, local FB groups, Twitter, etc.).

g. **Cost structure and revenue streams**
   Again, the money necessary to deploy and maintain the service is provided from the municipality budget. This service focuses on the quality of life and the wellbeing of the citizens so there it has lesser impact on the tax revenues. However the service can help municipalities to better prioritize on local investment and spending, as the service will provide clues on the needs and priorities of the citizens. Efficiency gains can be achieved while delegating some of the projects directly to local activists. The platform could also help improve the management of the participatory budget initiatives held by some cities (when citizens vote on projects that they think should get highest priority in the municipality budget for the given year). Importantly some of the projects will solve issues or satisfy needs that otherwise would have been covered from the city budget and the management cost would be delegated on the initiators of the project taking off the burden from the local officers. Savings in the municipality budget can be allocated for covering essential maintenance cost of the application as well as encourage investment in further development of the services or new services.

h. **Unfair advantage**

4.2.3.2 Cloud Funding application exploitation plan draft

4.2.3.2.1 Targeting
   a. **Target group**
   Detailed description, including timing and geographical coverage

   b. **Quantification and qualification of target groups**

4.2.3.2.2 Positioning
   a. **Main competitors**

   b. **Comparison of competitive solutions or approaches**

   c. **Unique value proposition**

4.2.3.2.3 Communication plans
   a. **Description of the communication channels and tools**

   b. **Communication activities plan**
   Plan the steps to be taken to use the available channels, reach the potential users and get feedback

4.2.3.2.4 Constraints and risks

4.2.3.2.5 Documentation and procedures
   Catalogue of documents needed to deliver the service: preparatory instructions, agreements, manuals, etc. This should include all the documentation clients will need to really use the service

4.2.3.2.6 Key performance indicators (KPIs)

4.2.3.2.7 Actions to be taken to achieve KPIs

4.2.3.2.8 IPR management
4.2.4 Scalability and exploitation plan for the **Live the City** application

4.2.4.1 Live the City application business model

a. Live the City application lean canvas

![Figure 7: Lean Canvas for Live the City application](image)

b. Problem addressed by Live the City application

Live the City is an application, which addresses the problem of low citizen participation in social, cultural and other events organised in the city caused by lack of information about that event or by difficulties with finding them.

c. Solution

The service offers the citizens one simple digital, easy to use tool, for different types of end users, which enables trouble-free access to information about different types of events. Furthermore, the application facilitates citizens’ participation in organizing and informing about such events in the city.

d. Customer segments

The application is primarily targeted at: tourists and local citizens. Its unique value proposition is an online access to the complete calendar of local events in one place. Importantly, the content is build both by local institutions as well as collective effort of the citizens and event organisers and the service is maintained by the local authority providing ad-free experience, transparency, equal visibility to all events, collaborative filtering and quality check.

e. Unique value proposition

Live the City brings online access to a complete calendar of local events in the city.

f. Channels

Similarly to the Cloud Funding the Live the City application is targeted at the citizens at large, so it can benefit from the wide range of communication channels that the municipality typically uses while promoting these types of services (websites, correspondence, leaflets, posters in the city halls, etc.) and the network of local institutions responsible for culture, arts, education, tourism and entertainment (culture centres, libraries, sport centres, parks, schools, points of interest). The municipalities can also leverage local social media channels (official fanpages, local FB groups, Twitter, etc.).
g. **Revenue streams**  
As before, the money necessary to deploy and maintain the service is provided from the municipality budget. This service focuses on the quality of life and the wellbeing of the citizens so its impact on the tax revenues is only indirect. The city cannot charge any type of subscription fee, however it could make an agreement with the Broker to act as the service exploitation entity, however this would imply a different business model, where the Broker is the service provider subsidised by the local authority. Such and alternative model is fully compatible with the exploitation strategy of the Storm Clouds Platform described in section 4.1.

h. **Cost structure**  
Costs are derived from application deployment and updating of the S.C. platform

i. **Unfair advantage**  
Main competitors are applications that add value for improving the quality of life of local communities

4.2.4.2 **Live the City application exploitation plan draft**

4.2.4.2.1 **Targeting**

a. **Target group**  
Detailed description, including timing and geographical coverage

b. **Quantification and qualification of target groups**

4.2.4.2.2 **Positioning**

a. **Main competitors**

b. **Comparison of competitive solutions or approaches**

c. **Unique value proposition**

4.2.4.2.3 **Communication plans**

a. **Description of the communication channels and tools**

b. **Communication activities plan**  
Plan the steps to be taken to use the available channels, reach the potential users and get feedback

4.2.4.2.4 **Constraints and risks**

4.2.4.2.5 **Documentation and procedures**  
Catalogue of documents needed to deliver the service: preparatory instructions, agreements, manuals, etc. This should include all the documentation clients will need to really use the service

4.2.4.2.6 **Key performance indicators (KPIs)**

4.2.4.2.7 **Actions to be taken to achieve KPIs**

4.2.4.2.8 **IPR management**
4.2.5 Scalability and exploitation plan for the Have Your Say application

4.2.5.1 Have Your Say application business model

a. The Have Your Say application lean canvas

b. Problem addressed by Have Your Say

Have Your Say is an application, which addresses the problem of unavailability of the tool for discussing social initiatives among different local community groups. Other barriers hindering social engagement are: lack of useable methods and ways for carrying out local opinion polls, weak engagement of local communities in the process of managing the city, lack of communication channels between citizens, businesses and municipality officers posing difficulties in finding the right project representatives, ambassadors, partners and enabling important city projects, for instance smart city initiatives.

c. Solution

Have Your Say is a public consultation platform for municipality driven projects. The service offers municipalities a possibility to put online any project proposals and launch public consultations. On the other hand the citizens gain possibility to express their opinion on the relevant topic via an easy to use online application.

d. Customer segments

The application is targeted at local citizens, local companies and other local entities (e.g. NGOs). Unique value proposition of the service is open online access to any city-related project proposal and an easy way to express opinions and moderate discussions about crucial aspects of local community living.

Similarly to other applications in the same category Have Your Say is targeted at the citizens, local businesses, local institutions, experts and activists, NGOs and other citizen organisations, so it can benefit from the wide range of communication channels that the municipality typically uses while promoting these types of services (websites, correspondence, leaflets, internal communication tools, posters in the city halls, etc.) and the network of local institutions responsible for economic, social and cultural activities in the city (chambers of commerce, technology parks, think tanks, universities, culture, libraries, sport centres, schools, etc.). The municipalities can also leverage local social media channels (official fanpages, local FB groups, Twitter, etc.).

e. Revenue streams

As in previous cases, the money necessary to deploy and maintain the service is provided from the municipality budget. This service focuses on the city management quality. Efficiency gains can be achieved by building common understanding and support for a given projects and making better-informed decisions. The service should be considered as an important risk mitigation tool that can bring in important savings by avoiding wrong
decision and taming citizen dissatisfaction. The initial investment cost in the application deployment and the maintenance cost are expected to be fully covered with the efficiency gains in better investment decisions.

4.2.5.2 Have your say application exploitation plan draft

4.2.5.2.1 Targeting

a. Target group
Detailed description, including timing and geographical coverage

b. Quantification and qualification of target groups

4.2.5.2.2 Positioning

a. Main competitors

b. Comparison of competitive solutions or approaches

c. Unique value proposition

4.2.5.2.3 Communication plans

a. Description of the communication channels and tools

b. Communication activities plan
Plan the steps to be taken to use the available channels, reach the potential users and get feedback

4.2.5.2.4 Constraints and risks

4.2.5.2.5 Documentation and procedures
Catalogue of documents needed to deliver the service: preparatory instructions, agreements, manuals, etc. This should include all the documentation clients will need to really use the service

4.2.5.2.6 Key performance indicators (KPIs)

4.2.5.2.7 Actions to be taken to achieve KPIs

4.2.5.2.8 IPR management
4.2.6 Scalability and exploitation plan for the City Branding application

4.2.6.1 City Branding application business model

a. The City Branding application lean canvas

![Figure 9: Lean Canvas for City Branding application](image)

b. Problem addressed by City Branding application

City Branding addresses the problem of weak targeting of different visitor groups with tourist information. The available information is fragmented, not adjusted to the needs of different type of tourists and their diverse interests. Furthermore currently, when only third party guides are available, the municipalities have little influence on what the visitors see and therefore have no means for shaping the image of the city and converting the touristic traffic into the revenues for local business owners. Linking guided tours to shops and services of relevance and true value to particular user groups is very limited.

c. Solution

The service will facilitate access to information about various aspects of city’s identity (history, culture, economic environment, arts, entertainment) in connection with local business and entrepreneurship.

d. Unique value proposition

The unique value proposition of the service lies in providing content-rich and diverse travel guides to different user groups with link and facilitated access to local shops and service providers located near to the recommended point of interest.

e. Customer segments

The application is targeted mainly at tourists (end-users) and local companies (end beneficiaries).

f. Channels

The main channels to access the tourists and local shop goers will be local tourist agency and stickers/posters placed in the shops. As for the shop owners they can effectively be approached via a chamber of commerce, targeted outbound marketing campaigns and word-of-mouth communication.

g. Revenue streams

The money necessary to deploy and maintain the service is provided from the municipality budget, and this investment should be returned with the increased revenue from taxes. The impact of the service should result in additional income from Personal Income Tax (PIT) (against increased revenues of business owners acting as sole traders and their employees), Corporate Income Tax (CIT) (corporate tax paid by the incorporated business
establishment benefiting from the service), Value Added Tax (VAT) (form the increased turnover of goods and services paid by tourists and local citizens) and other taxes like city tax (increased number of tourists coming to the city due to better tourist information available). Additional revenues from taxes can cover essential maintenance cost of the application as well as encourage investment in further development of the service as well as new ones.

h. Unfair advantage
Municipality holds the main content of the service and could recommend the places worth seeing

4.2.6.2 City Branding application exploitation plan draft

4.2.6.2.1 Targeting

a. Target group
Detailed description, including timing and geographical coverage

b. Quantification and qualification of target groups

4.2.6.2.2 Positioning

a. Main competitors

b. Comparison of competitive solutions or approaches

c. Unique value proposition

4.2.6.2.3 Communication plans

a. Description of the communication channels and tools

b. Communication activities plan
Plan the steps to be taken to use the available channels, reach the potential users and get feedback

4.2.6.2.4 Constraints and risks

4.2.6.2.5 Documentation and procedures
Catalogue of documents needed to deliver the service: preparatory instructions, agreements, manuals, etc. This should include all the documentation clients will need to really use the service

4.2.6.2.6 Key performance indicators (KPIs)

4.2.6.2.7 Actions to be taken to achieve KPIs

4.2.6.2.8 IPR management
5 Other exploitation opportunities

This chapter will describe individual opportunities of exploitation of project’s results outside of the identified exploitable assets. Examples of exploitable results may be knowledge, methodologies, experiences, etc.

<table>
<thead>
<tr>
<th>Partner</th>
<th>Exploitable result</th>
<th>Role</th>
<th>Exploitation potential</th>
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6 Summary and Conclusions

The chapter will be completed in the final release of deliverable D6.3.2 due at the end of the project.
Annexes

6.1 Business model Generation workshop slides

Delivered in a separate file titled “Business Model Generation workshop_slides.pdf”.
References


